

# *Wired for Learning*

by Jim Carroll

**"A global computer is taking shape, and we're all connected to it."**



Leading experts from IBM have predicted that by the year 2000, almost half of the global revenues derived from information technology (including hardware, software and services) will focus on Internet-related products. Today's Educators must keep pace with these revised technological realities.

As business evolves to meet the unprecedented level of information made possible by the Internet, the ability to navigate, interpret and use the riches of the wired world, will be critical for students' future job and career success. As Educators, our foremost challenge, therefore, is to provide our young people with the skills they need to master and survive in an information-based society.

## **Embracing the Future**

Today's youth will be wired tomorrow - much of what they do on a day-to-day basis will be found in the collective knowledge of the wired world. Survival will only be possible for those with the skills and ability to transform massive quantities of information into useful knowledge. As Alvin Toffler, the famous futurist said, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."

In an information-based society, the business world, and even life in general, will be very different than it is today. Students will be graduating into an economy and a society that are Net-dependent. E-mail, video mail and conferencing mail will be the norm. People from all corners of the globe will participate in "virtual" projects. Graduates will be masters of "just-in-time" knowledge and as such, will be expected to utilize the collective knowledge of the wired world to compile their documents and reports and to research topics, issues and current projects.

In order to prepare students for this new world, we as Educators, must instill in them both the wisdom and courage to deal with the information age. We must also teach them the analytical skills they need to survive in the information flood.

## **Basic Skills of the Future**

Mastering Internet basics (like how to surf the Web and how to construct a Web page) will not be enough. The river of available information will also have to be converted into useful knowledge. Students must be taught to think about, to analyze and to question the data and to differentiate between what is relevant, irrelevant or simply untrue.

### **1. On-Line Research Skills**

One day soon, the ability to perform effective electronic research will be as important as reading, writing and arithmetic. According to many leading researchers, as much new text is now being published daily as the total text produced since the beginning of the nineteenth century, when writing was invented. This means that every four or five years, the total amount of information in the world doubles. At these current rates of growth, the total human knowledge available in 1993 will only be 1% of the information available to children in 2050. We need to prepare our young people for this information-rich world.

The ability to find and analyze relevant information will be critical for future success. Students must be taught how to search electronically, to know where to start their search for information, and how to determine what tools are appropriate to complete the task. They must also be motivated to continually reinvent a search for knowledge, especially if their initial investigations do not unearth the desired results.

## **2. Information Analysis Skills**

Simply knowing how to find relevant information will not be enough. The ability to understand what the data means will be even more critical. In the information flood, Educators must reinforce the critical skills of thinking, evaluating and analyzing. We must teach students how to interpret on-line data and how to assess its validity.

Students must be taught how to transform data into knowledge, or else they will find themselves drowning in a sea of information, unable to surface or comprehend the world around them. The ability to assess what different and often conflicting sources might be saying will be critical to future success. Educators will be called upon to teach our children how to exercise a “skeptical eye.”

## **3. Information “Coping” Skills**

In business, media, entertainment, research education and government communities, the global rate of adoption of the Internet over the last three years has been nothing less than stunning. Already, there is a mind-boggling array of data that can be introduced into the classroom and the curriculum.

Typically, many students are overwhelmed by the sheer volume of available information. These feelings are not uncommon. Even veteran users frequently complain of feeling inadequate. Educators will be called upon to give our youth the courage to deal with the explosive quantities of data found in the information age and to help them cope with a level and volume of information that mankind has simply not had to deal with before.

## **4. On-line Networking Skills**

One of the major benefits of the Internet is in the opportunity to link the classroom to an expert. Studying a course that involves the space sciences? Take part in NASA's “Ask-an-Expert” program. Examining political science? Teachers can encourage students to correspond with one of the many Members of Parliament who actively use the

Internet. Studying geography? Access geographic experts worldwide.

The Internet allows people to network electronically. Think about the impact this will have on future economic systems. The business world is already well on its way to adopting the Internet-related technology necessary to establish and operate electronic project teams. In fact, experts predict the economy will evolve from predominantly full-time employment to part-time knowledge workers, many of whom interact with their employers electronically. Today's students must therefore be taught how to work in a world that is based on electronic collaboration.

## **5. Judgment Skills**

The Internet has many capabilities; it also has many risks. For example, it is already being used to distribute misinformation and lies about investment, medical and scientific subjects and to distribute hate literature, pornography and other distasteful information of questionable origin.

The student living in the information age will be required to exercise judgment and perceive the difference between valid and invalid information and what is right and what is wrong. The Educator responsible for preparing them for the future, must therefore provide them with the skills necessary to make these value judgments. Achieving this goal will only be possible by sharing the benefit of our experience, wisdom and guidance with our young people.

## **We Can Energize the Classroom**

Unlike previous generations, our youth have “grown up” with technology. Although this has opened up a world of exciting possibilities, it has become increasingly more difficult to compete for the “Nintendo Generation's” attention. Whether aged 5 or 20, students have been exposed to a diverse array of technology including video games, computers, VCR's, multi-channel televisions and high-tech

decades, to name just a few. They are so used to “changing the channel” or “hyper-linking” to a new Web site, that they do not think in the straight, linear manner of preceding generations.

Trying to motivate a student to complete their homework or concentrate on a university assignment when they are faced with so many technological distractions, is quite a challenge. Given today's fiscal realities, how then can we expect to get and keep their attention?

Until now, it has been difficult to introduce new information to the classroom. Budget cutbacks have forced Educators to use old and out of date textbooks. Additionally, insufficient quantities of expensive magazines and/or, tiny or non-existent photocopy budgets all make it difficult to create an optimum learning environment.

The good news is, Internet use can dramatically change classroom content and opportunities. Current events? Draw upon tens of thousands of on-line, up-to-date newspaper, television, magazine and other news sites. Political science? Access thousands of up-to-the-minute sites throughout the World Wide Web. Physics? For the elementary classroom, you can draw upon resources as diverse as VolcanoWorld On-Line and NASA. Geography? Travel to Hong Kong, on-line! The possibilities are endless.

## **The Time for Action is NOW**

We can't afford to lose the momentum that is already underway. Even if we believe we are ill-equipped to deal with Internet fundamentals, we must still be prepared to move forward at a rapid pace. Somehow, Educators across Canada must find the time to understand the role and advantages of the Internet in the classroom and to learn how to use this educational tool for maximum benefit.

Unfortunately, for many schools, the cost of a link to the Internet is still out of reach. In my 1995 book, *The Canadian Internet Handbook*, my co-author and I noted that: "...Educators, government officials, business people - everyone - should encourage and

foster an environment in Canada which makes it easier for schools to plug into the Internet. This can be done by encouraging greater government support for the Internet through tax initiatives and by creating a telecommunications environment that supports Internet investment. Business can get involved by providing funding to the educational community, by providing schools with access to the Internet through corporation networks, and by participating in “ask-the-expert” programs.”

The Internet is far too important to treat as a fringe, a luxury, or as an option. In addition to funding for classroom link-up to the Internet, there are many other challenges that must be solved before real progress can be made:

### **We must accept the future.**

To provide our youth with the tools of the future, everyone involved in the education system (administrators, teachers, parents and planners) must accept the inevitability of the Internet world. This means there must be total and unequivocal support from everyone involved in Education and a clear commitment to teach our students the fundamental, critical, analytical skills outlined earlier.

Schools Boards, Community Colleges, Universities and other organizations/institutions who are involved in the business of education, must be prepared to take the necessary steps to support the teacher in the classroom. Much more must be done to give today's teacher the tools they need to teach the Internet in the Classroom (i.e., providing them with adequate resource materials, supporting materials, training, guidance and encouragement).

### **We must “ramp up” the technical infrastructure.**

Although stellar progress has been made by the Ontario Government (and in particular, the Ministry of Education & Training) in bringing the Internet into the classroom, there are still many hurdles to be overcome. For example, in remote communities, current Internet connections are slow and unwieldy and prevent students from accessing many newer, on-

line multimedia capabilities. Furthermore, much of the existing hardware and software are simply not capable of facilitating classroom Internet education.

We need a concerted effort by the educational system and by the government to ensure the technical infrastructure keeps up with the rapid evolution of the Internet technology, including the higher access speeds that are required.

### **We must get over our fear of looking dumb!**

Our schools are filled with an entire generation of young people who know more about computers and the Internet than their teachers. This can be intimidating and many teachers report feeling inadequate or even incompetent.

Some Educators run in terror away from today's technological realities, including trying to ignore the existence of the Internet. However, this is not a very effective way of dealing with the future. The reality is, today's youth have embraced the Internet as their own. Educators must accept this revised reality and be prepared to educate young people in the areas they need to master. Only then will they be able to survive and thrive in a wired world.

### **We must not give in to our dread of a "wired" world.**

Until now, the media has led Educators to believe that the Internet can be a terrifying and dismal place, full of exploitation and misinformation. However, Educators who shy away from the Internet as a result of media sensationalism are missing one of the greatest educational opportunities of our time.

Spend some time on-line and travel to the marvelous knowledge tools that have emerged. Embrace the global encyclopedia and explore its riches. Take part in the most wonderful information explosion to occur since the printing press freed mankind from the shackles of the middle ages.

Remember, our children will grow up in a digital world that involves a free-flowing exchange of information and that has no respect for national borders. As Educators, our challenge is to teach

them how to cope in a marvelous information world, that can't help but mirror the frailties and weaknesses of our society.

### **We must ensure that the fundamental values we have, are not lost in the shuffle.**

Sadly, English has become the global language of the Internet. As we begin to move into a homogenized, global culture, other languages, cultures and values have the potential to be lost in the shuffle. In our enthusiasm to embrace the Internet, we cannot afford to circumvent our collective values, visions and beliefs. When we prepare our curriculum for the future and create the tools our teachers need to teach our students how to excel in the information age, it will be important to respect Canada's enviable multiculturalism.

## **Conclusion**

The future will not wait for us to catch up. We cannot afford to ignore the Internet and the tremendous benefits of having the "best" of the information age in our classrooms. After all, the first wired generation in the history of mankind expects nothing less from us.